



The 19th century pressure data in Japan

Masumi ZAIKI (Kobe University)

with

G.P. Können: Royal Netherlands Met. Institute (NL)

P.D. Jones: Climatic Research Unit, UEA (UK)

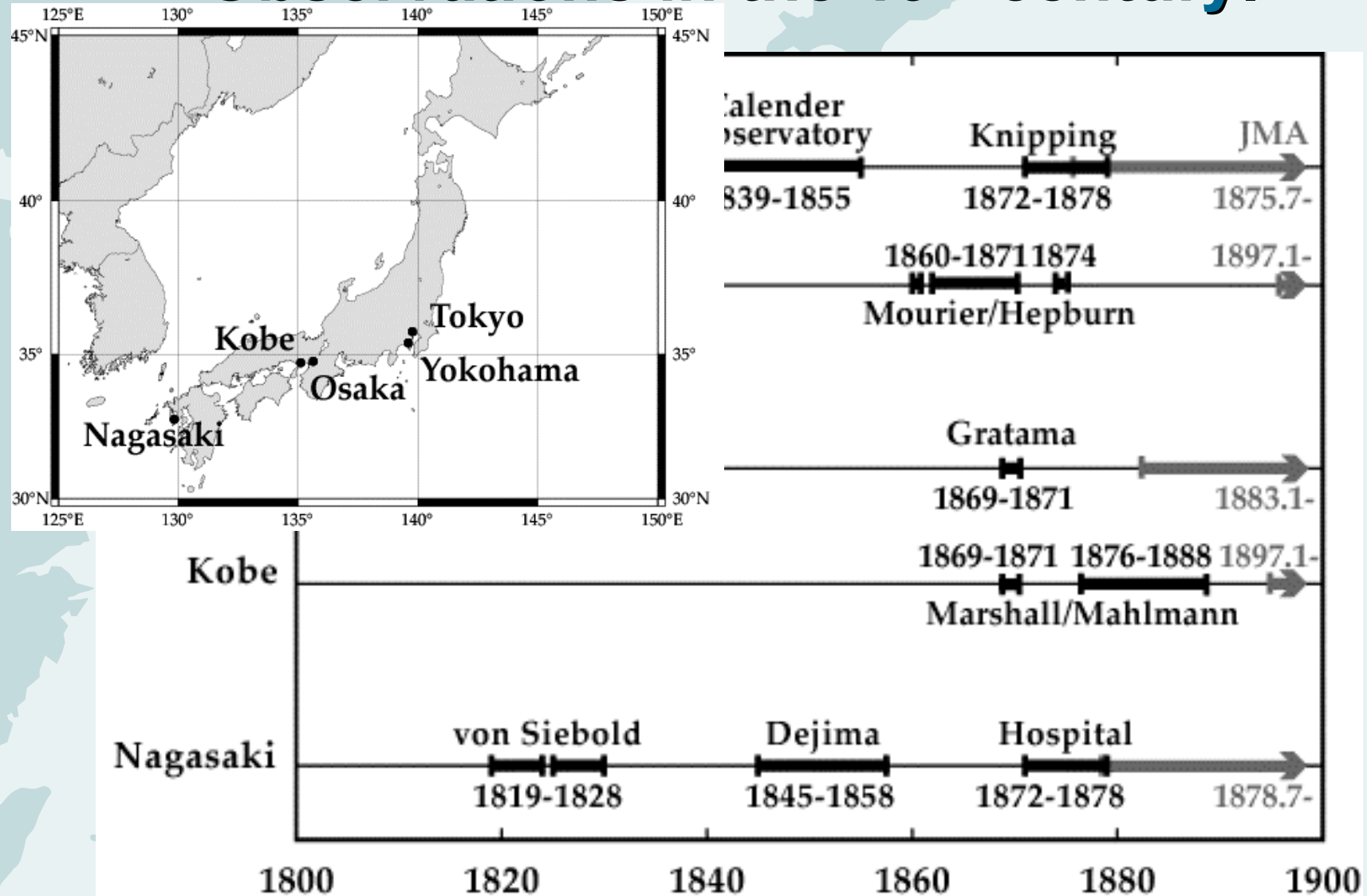
T. Tsukahara: Kobe University (JP)

T.Mikami: Tokyo Metropolitan University (JP)

Background of instrumental data in Japan

- 1875: Foundation of Japan Met. Agency (JMA)
- Pre-1875: Documentary and natural proxy indicators
- “Poor coverage outside Europe in the 18th and early 19th centuries.” (Lamb, 1995)
- Good news!
“The 19th century instrumental data taken in Nagasaki were kept in KNMI library.”
- There are many fragments spread over the world.

Recovered instrumental temp. and press. Observations in the 19th century.



Recovered instrumental temp. and press. Observations in the 19th century.

October 1827

Poggenmeyer										Voss										Atmosp. bar.										Ebbe und Fluth									
Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May
12	23.09	23.10	23.11	23.12	23.01	23.02	23.03	23.04	23.05	12	23.09	23.10	23.11	23.12	23.01	23.02	23.03	23.04	23.05	12	23.09	23.10	23.11	23.12	23.01	23.02	23.03	23.04	23.05	12	23.09	23.10	23.11	23.12	23.01	23.02	23.03	23.04	23.05

Calendar	Observatory	Knipping	JMA
1839-1855	1872-1878	1875.7-	
	1860-1871	1874	1897.1-

Kobe	Nagasaki	von Siebold	Dejima
		1819-1828	1845-1858
		1820	1840
		1860	

朝薄曇北風烈	中星不測	太陽南中不測	初昏曇	午正雨	朝雨南風烈	天保九年戊戌十一月一日己亥	寒暖儀	晴雨儀	測午鏡
十一月二日庚子									
朝薄曇北風烈	中星不測	太陽南中不測	初昏曇	午正雨	朝雨南風烈	天保九年戊戌十一月一日己亥	寒暖儀	晴雨儀	測午鏡
二十四寸七分餘	六十四寸五分	六十一寸五分	六十一寸五分	六十一寸五分	六十一寸五分	五十二度	五十二度	五十二度	五十二度

Project scheme

Meteorological records
in the 19th century

Digitization

**-Adjustment
-Correction**

Homogenization

Quality check

19th century data

+

JMA since 1870's

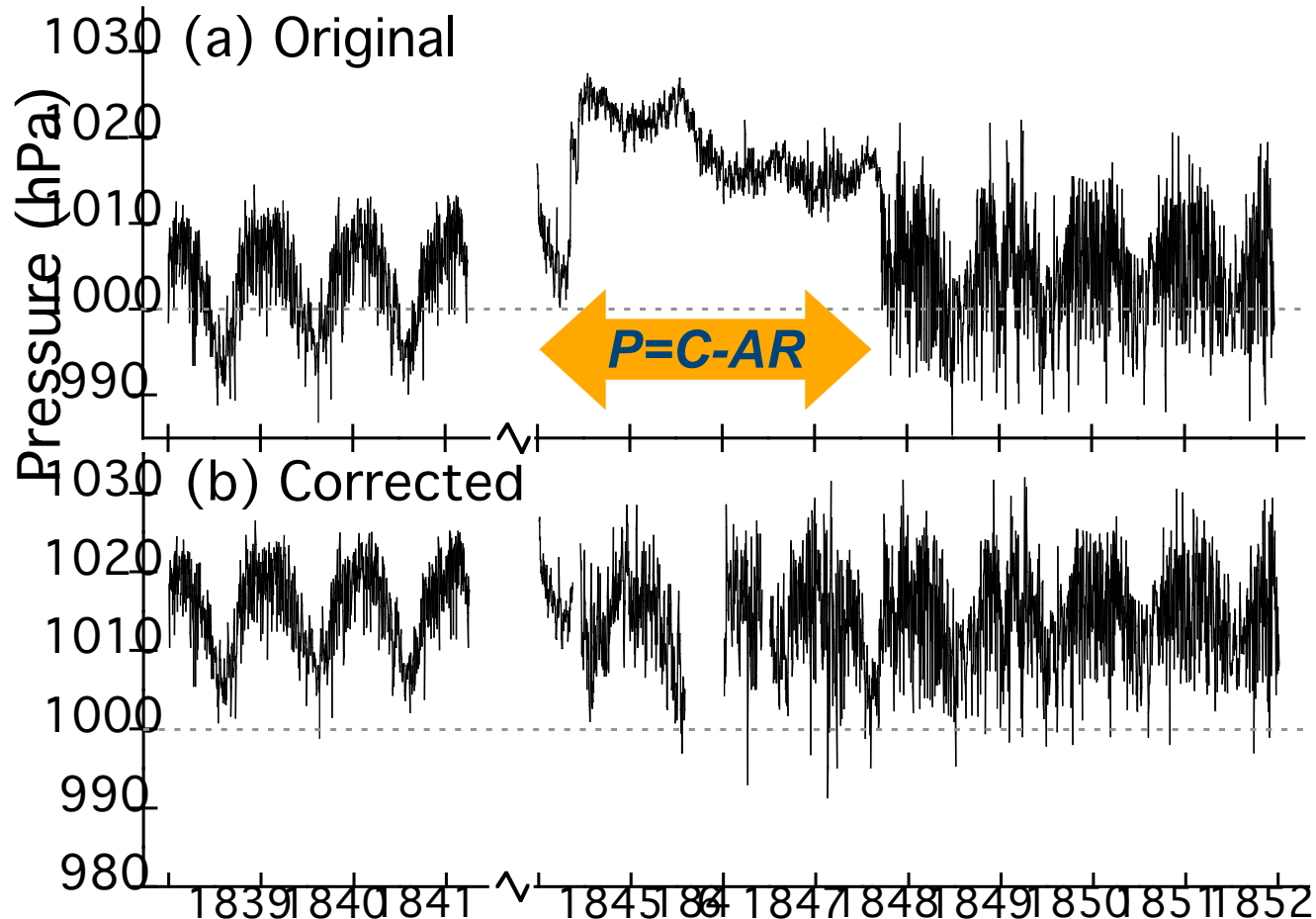
Analyses for climatic variations

- 1) Excavation
- 2) Documentation
- 3) Keying
- 4) Unit decoding

- 1) Basic adjustment
- 2) Correction

Corrections for Pressure Unexplained Biases

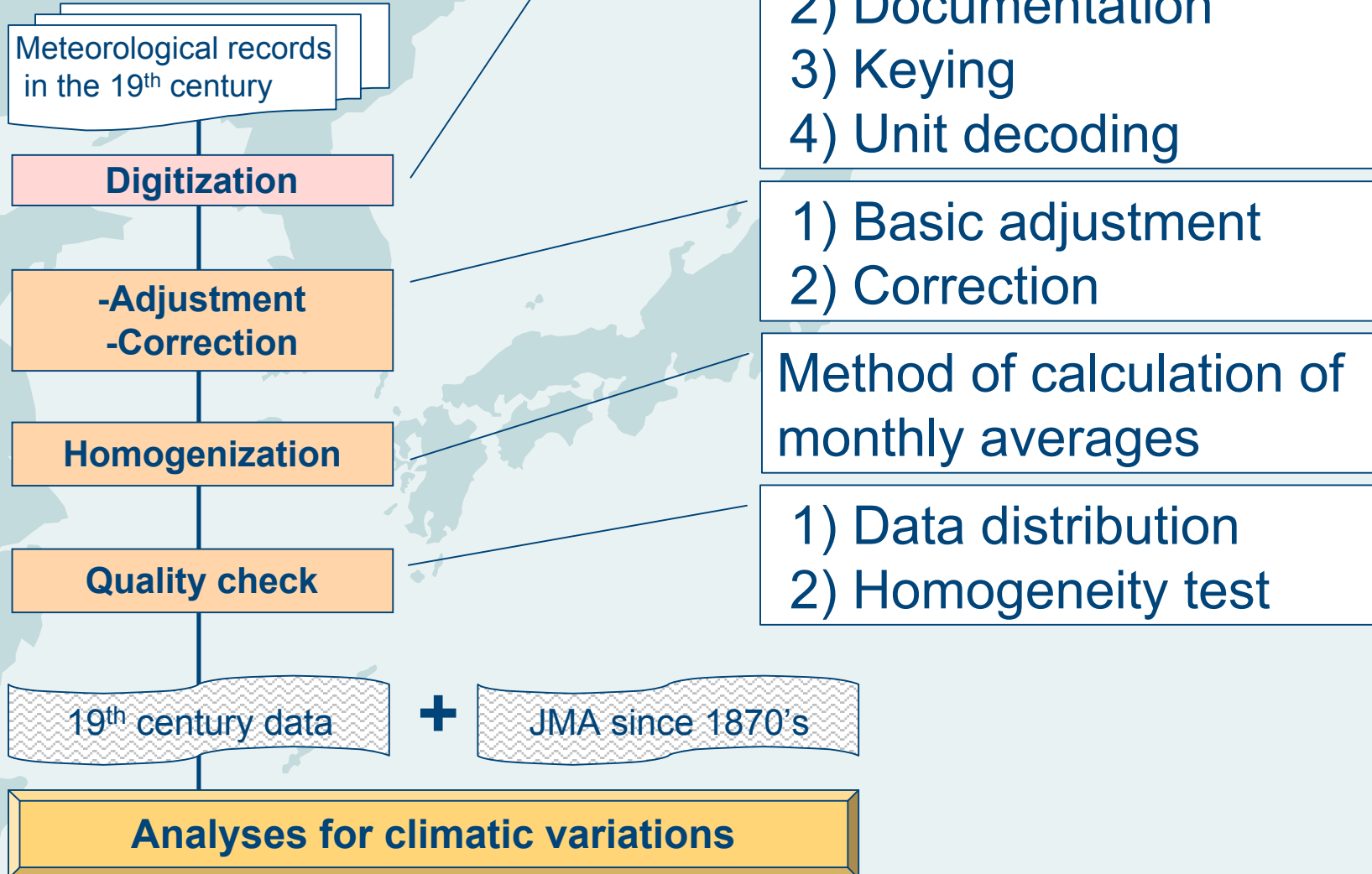
- Tokyo (1845-1848)



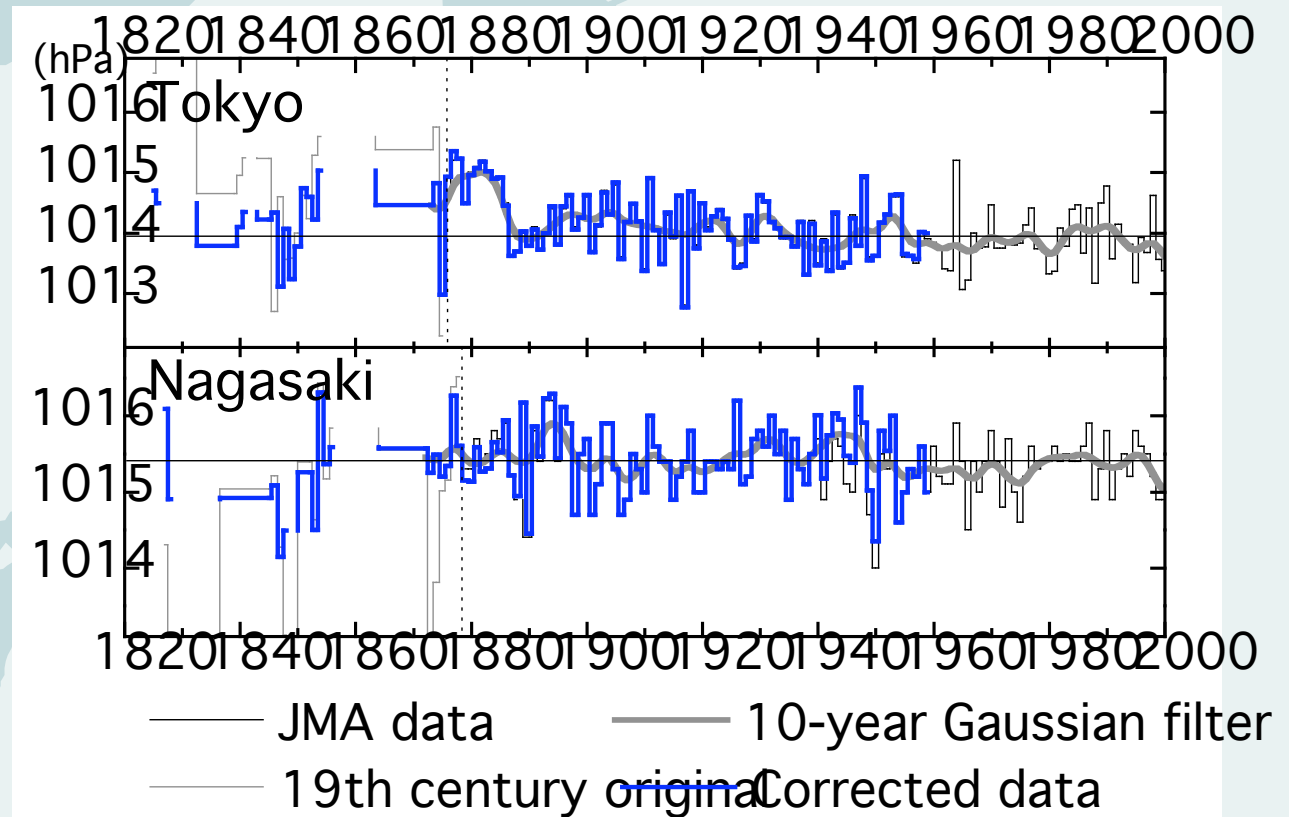
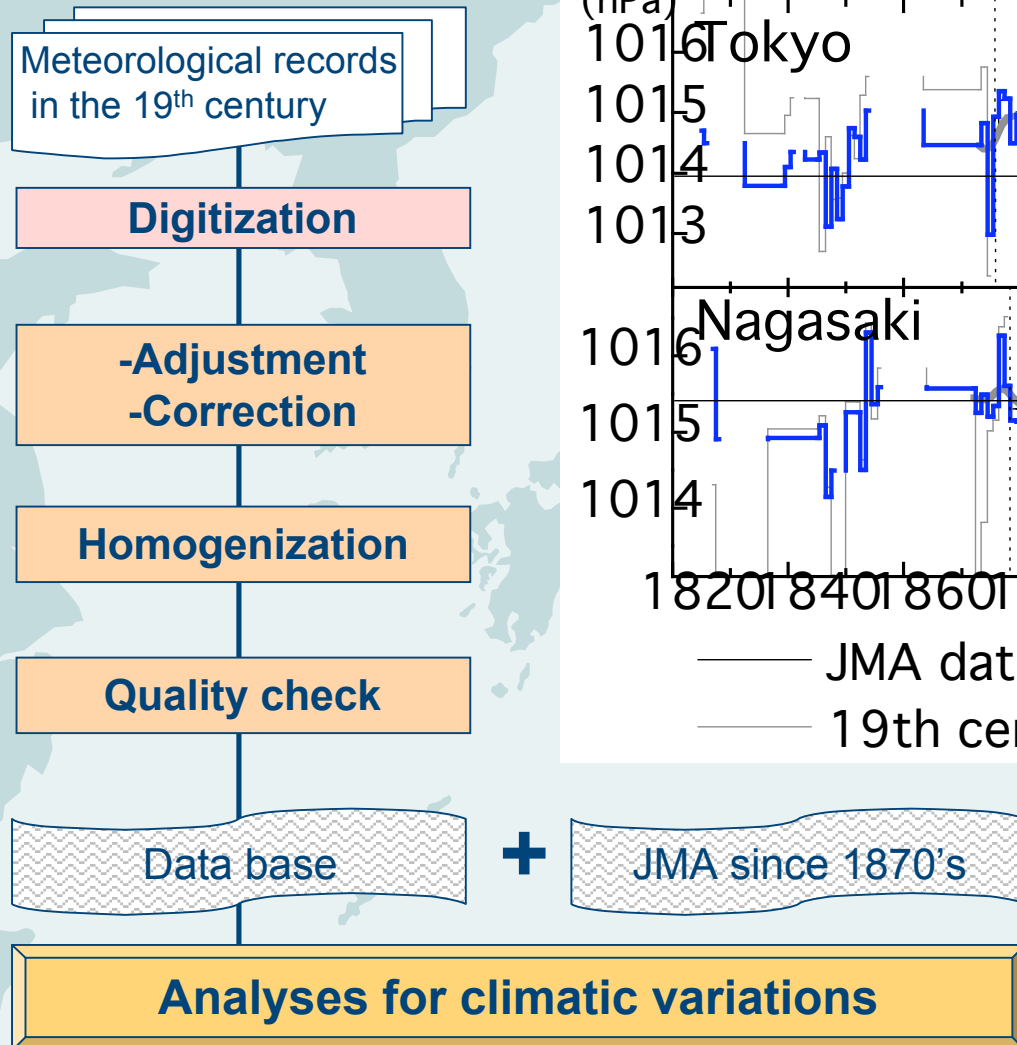
A : inflation factor

C : constant

Project scheme



Now monthly data are available.



Available from

- Können et al. (2003)
- Zaiki et al. (2005)
- CRU website